

CLAIMS

What is claimed is:

- Sub 027
1. A method of distributing and sharing processing loads and increasing fault tolerance between provider equipment and subscriber equipment of an interactive information distribution system, comprising the steps of:
 - 5 requesting video information from said subscriber equipment;
 - executing a video session from at least one managing module on a primary head-end controller;
 - dedicating at least one secondary head-end controller having said at least one
 - 10 managing module as a reserve resource for executing said video session;
 - storing session-state data from said executed video session on at least one storage device; and
 - streaming said video information to said requesting subscriber equipment during a normal mode of operation.
 - 15 2. The method of claim 1, wherein a function of said at least one managing module is distributed further comprises the step of:
 - executing said video session from said at least one managing module on said
 - primary head-end controller and said at least one secondary head-end controller.
 - 20 3. The method of claim 2, wherein a function of said managing module is not distributed amongst said primary and secondary head-end controller and said method comprises the step of:
 - executing said video session from said at least one managing module on said
 - 25 primary head-end.
 4. The method of claim 3, comprising the steps of:
 - processing said session-state data through said at least one distributed managing
 - module concurrently on said primary head-end controller and said at least one
 - 30 secondary head-end controller, wherein said at least one distributed managing module

on said primary head-end controller and said at least one secondary head-end controller is in an active mode; and

processing said session-state data from said at least one non-distributed managing module on said primary head-end controller, wherein said at least one non-distributed managing module on said primary head-end controller is in an active mode, and
5 wherein said at least one non-distributed managing module on said secondary head-end controller is in a standby mode.

5. The method of claim 4, a method comprising the steps of:

10 processing said session-state data produced by said primary head-end controller via said at least one secondary head-end controller in a failure mode of operation, wherein said primary head-end controller becomes inoperative.

6. The method of claim 5, comprising the steps of:

15 streaming video information from a stream server to an access controller in said normal mode of operation, wherein said primary head-end controller manages said video session between said stream server and said plurality of access controller; and

streaming video information from said stream server to said access controller in said failure mode of operation, wherein said secondary head-end controller manages said
20 video session between said stream server and said access controller.

7. The method of claim 1, comprising the steps of:

storing said session-state data produced by said primary head-end controller on said at least one storage device coupled to said primary head-end controller; and

25 storing said session-state data produced by said at least one secondary head-end controller on said at least one storage device coupled to said primary head-end controller.

8. The method of claim 7, comprising the step of:

replicating said stored session-state data from one of said plurality of storage devices coupled to said primary head-end controller, to each of the remaining storage devices of said plurality of storage devices coupled to said at least one secondary head-end controller; and

5 wherein said at least one secondary head-end controller retrieves said session-state data executed by said managing modules of said primary head-end controller for continuing said video session with said subscriber equipment.

9. The method of claim 1, further comprising the steps of:

10 storing said session-state data produced by said primary head-end controller on a memory device coupled to said primary head-end controller; and

 storing said session-state data produced by said at least one secondary head-end controller on said memory device coupled to said primary head-end controller.

15 10. The method of claim 9, comprising the step of:

 replicating said stored session-state data from said memory device coupled to said primary head-end controller, to at least one memory device coupled to said at least one secondary head-end controller; and

20 wherein said at least one secondary head-end controller retrieves said session-state data executed by said managing modules of said primary head-end controller for continuing said video session with said subscriber equipment.

11. Apparatus for distributing information through a network comprising:

25 a stream server;

 a plurality of head-end controllers, coupled to said stream server, for managing a video session; and

 a plurality of access controllers, coupled to said plurality of head-end controllers, for interacting with said subscriber equipment during said video session to responsively

provide video information to a network upon a request for video information from the network.

12. The apparatus of claim 11, wherein each head-end controller of said plurality of head-end controllers comprises:
- a plurality of managing modules for executing said video session;
 - a processor for processing session-state data produced by said plurality of managing modules; and
 - memory devices, coupled to said processor, for temporarily storing said session-state data.
13. The apparatus of claim 12 wherein said plurality of head-end controllers comprises a primary head-end controller and at least one secondary head-end controller.
14. The apparatus of claim 13, wherein:
- in a normal mode of operation, said primary head-end controller interacts with said stream server to generate said video information, and said at least one secondary head-end controller remains in a standby mode; and
 - in a failure mode of operation, said primary head-end controller is inoperative, and said at least one secondary head-end controller interacts with said stream server to produce video information.
15. The apparatus of claim 14, wherein said plurality of managing modules comprise:
- at least one distributed managing module, for processing session-state data through both primary head-end controller and said at least one secondary head-end controller concurrently; and
 - at least one non-distributed managing module, for processing session-state data by said primary head-end controller.
16. The apparatus of claim 15, wherein:

in a failure mode of operation, a portion of said plurality of access controllers coupled to said inoperable primary head-end controller interface with said secondary head-end controller, whereby all of said plurality of access controllers are interfacing with said at least one secondary head-end controller, to responsively interact with said network.

17. The apparatus of claim 16, wherein:

in a failure mode of operation, said at least one distributed managing module and said at least one non-distributed managing module executes said video session through said at least one secondary head-end controller.

18. The apparatus of claim 17 further comprising:

a centrally networked storage device coupled to said primary head-end controller and said at least one secondary head-end controller, for centrally storing said session-state data produced by said plurality of managing modules; and

in said failure mode of operation, said at least one secondary head-end controller retrieves said session-state data stored on said centrally networked storage device by said primary head-end controller, for continued interaction with said stream server to provide said video information to said network.

19. The apparatus of claim 17, further comprising:

a plurality of local storage devices, coupled to said primary head-end controller and said at least one secondary head-end controller, for locally storing said session-state data produced by said plurality of managing modules.

20. The apparatus of claim 19, wherein:

said session-state data is replicated from one of said plurality of local storage devices coupled to said primary head-end controller, and stored on the remaining plurality of local storage devices of said at least one secondary head-end controller.

of claim 120, wherein the mode of operation, said replicated session-state, and the continued interaction with said network.

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